

Crystal Data: Cubic. *Point Group:* $2/m\bar{3}$. Rare as rounded pyritohedral crystals, to 1 mm; as minute grains in Pt–Fe alloy in a platinum nugget, and as inclusions in chromite.

Physical Properties: Hardness = n.d. VHN = 1730–1950, 1854 average (100 g load). D(meas.) = 8.28 D(calc.) = 9.59

Optical Properties: Opaque. *Color:* Gray. *Luster:* Metallic.
R: (400) 44.4, (420) 44.2, (440) 44.0, (460) 43.8, (480) 43.4, (500) 43.0, (520) 42.7, (540) 42.2, (560) 41.7, (580) 41.3, (600) 40.9, (620) 40.4, (640) 40.0, (660) 39.4, (680) 38.8, (700) 38.2

Cell Data: *Space Group:* Pa3 (synthetic). $a = 5.6196(3)$ $Z = 4$

X-ray Powder Pattern: Synthetic. (ICDD 19-882).
3.24 (100), 2.810 (85), 1.694 (85), 0.780 (65), 1.987 (55), 0.787 (55), 1.081 (30)

Chemistry:	(1)	(2)	(3)
Os	68.0	64.3	74.78
Ir	2.6	3.5	
Rh	3.8	5.5	
Ru	0.4	0.4	
Pd	0.5	0.6	
S	25.2	25.5	25.22
Total	100.5	99.8	100.00

(1) MacIntosh mine, California, USA; by electron microprobe, corresponding to $(\text{Os}_{0.89}\text{Rh}_{0.09}\text{Ir}_{0.04}\text{Pd}_{0.01}\text{Ru}_{0.01})_{\Sigma=1.04}\text{S}_{1.96}$. (2) Western Ethiopia; by electron microprobe, corresponding to $(\text{Os}_{0.84}\text{Ir}_{0.05}\text{Rh}_{0.13}\text{Ru}_{0.01}\text{Pd}_{0.01})_{\Sigma=1.04}\text{S}_{1.96}$. (3) OsS₂.

Polymorphism & Series: Forms a series with laurite.

Mineral Group: Pyrite group.

Occurrence: Typically in PGM placers, likely derived from chromitites associated with ophiolites and other Alaskan-type ultramafic complexes.

Association: Pt–Fe alloy, platinum, osmium, laurite, hollingworthite, irarsite, many other PGM alloys and sulfides.

Distribution: In the USA, in California, from a placer at the MacIntosh mine, Willow Creek, Trinity River, Humboldt Co. [TL], and in gravels from the American River, Sacramento Co.; in the Salmon River placers, Goodnews Bay, Alaska. From placers on the Tulameen River, British Columbia, Canada. In the Ural Mountain placers, Siberia, and in the Konder massif, Aldan Shield, Sakha, Russia. In a platinum metal nugget from Joubdo stream, Birbir River, Ethiopia. From placers at Guma Water, Sierra Leone. At Tiébaghi, New Caledonia. From Maud Creek, Howard River, New Zealand. In the Merensky Reef, Bushveld complex, Transvaal, South Africa. At Rio Pilpe, Colombia. In placers from the Santiago River, Esmeraldas Province, Ecuador. There are numerous other trace occurrences.

Name: For Jozef Erlichman (1935–), American electron probe analyst, Planetary Branch, NASA-Ames Research Branch, who analyzed a number of new minerals.

Type Material: Stanford University, Palo Alto, California, USA, 51965; National Museum of Natural History, Washington, D.C., USA123914.

References: (1) Snetsinger, K.G. (1971) Erlichmanite (OsS₂), a new mineral. *Amer. Mineral.*, 56, 1501–1506. (2) Cabri, L.J., Ed. (1981) Platinum group elements: mineralogy, geology, recovery. *Can. Inst. Min. & Met.*, 103–104. (3) Bowles, J.F.W., D. Atkin, J.L.M. Lambert, T. Deans, and R. Phillips (1983) The chemistry, reflectance, and cell size of the erlichmanite (OsS₂) – laurite (RuS₂) series. *Mineral. Mag.*, 47, 465–471. (4) Stingl, T., B. Müller, and H.D. Lutz (1992) Crystal structure refinement of osmium(II) disulfide, OsS₂. *Zeits. Krist.*, 202, 161–162.

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